

FIG. 6 illustrates an n-way call between five users, A1 through E1. **FIG. 6** illustrates that in a call each communication is communicated to all of the other users participating in the call (effectively broadcast).

[0041] Messages can be persistent forms of communication, meaning that as a message is sent to the recipient it is also stored in the Media Store **310** and can be retrieved any time thereafter. In the event that a message is sent to a recipient who is not online at the time, the message is available to the user when the user later logs into the system. Calls can also be persistent forms of communication, meaning that the entire conversation can be stored in the Media Store **310**. Alternatively, the MMS Server **300** can be configured not to store calls, in which case call persistence, or call recording, need not be implemented.

[0042] An MMS system can be configured to support presence-aware clients. Presence information can comprise the online state of a user, including but not limited to "Online" (e.g., the user's client device is connected to the current MMS network), "Offline" (e.g., the user's client device is not connected to the current MMS network), "Do Not Disturb" (e.g., the user's client device is connected to the MMS network but the user has set the device to automatically reject incoming call requests), or "Busy" (e.g., the user is online, currently in a call, and has call waiting disabled). The current status of each user can be available to any other user who is logged into the MMS server **300**, in some cases only if the user has been granted access to receive presence information. For example, groups of users can be defined and the MMS system can be configured to provide presence information only to other users in the same group. A user's presence status can be manually set by the human user, or automatically determined by the MMS server or by the user's MMS client device. For example, the user can set the status of her device to "Do Not Disturb," which can cause the MMS server **300** or MMS client device **314**, **316** to automatically reject any incoming calls.

[0043] Presence information can be implemented in a number of ways. For example, presence information can be implemented as broadcast messages from each user as that user's presence status changes. For example, presence information can be implemented using an "announcement" paradigm in which users log into the system and then announce that they are available to chat. This presence announcement can be propagated to all online clients. This same mechanism can be used whenever the online status of a client changes. Alternatively, presence information can be implemented as a query mechanism, in which a first user wanting to know the presence status of a second user would query the server for the second user's presence status.

[0044] An MMS as described herein can be configured to support "intelligent agents" as clients, meaning that users need not be humans. Intelligent agent software can be written to add additional features to a core MMS implementation, as long as the agents adhere to the client specification. For example, an email intelligent agent residing on a first MMS client could be configured to provide integrated email support by checking incoming email and forwarding urgent emails to a second MMS client as MMS messages.

[0045] An MMS system as described herein can be divided architecturally into two major components, the MMS Server **300** and MMS clients **314**, **316**. "Client" is

used interchangeably to refer to a mobile or stationary hardware device, or MMS client application software running on such a device.

[0046] MMS clients **314**, **316** can be configured to focus primarily on creating connections between two or more users to engage in information and media exchange. Communication can be conducted either through messages or through calls. MMS clients **314**, **316** can be configured to provide message and call communication capabilities. MMS clients **314**, **316** can be further configured to require users to log in to an MMS Server **300** for authentication. MMS clients **314**, **316** can be further configured to receive, detect, and/or provide user presence information to an MMS server **300** or other MMS clients **314**, **316**.

[0047] The MMS Server **300** deals primarily with creating and administering connections among users. Accordingly, and as described in more detail above, the MMS Server **300** can comprise a Session Manager **306** to maintain session data (such as presence information and hardware capabilities of each device) and enforce policies (such as bandwidth restrictions), a Media Distribution Center **302** to distribute static information and data to users, a Streaming Media Engine **312** to distribute live media between users, a System Database **318** to store server configuration and session settings, a Media Store **310** to store all messages and optionally all recorded calls passing through the server **300**, and an Inter-Server Communication Manager **304** for connecting users across multiple MMS Servers **300** via server-to-server communications.

[0048] This section describes one particular complete implementation of an MMS system configured in accordance with the systems and methods described herein. This implementation is referred to as "HipVoice." Additional features can be added to the full working version of the abstract MMS communications framework. HipVoice can be implemented as an abstract software layer or middleware, which allows software developers to build applications on top of MMS services in a hardware- and platform-independent, or "device agnostic," manner. For example, the MMS system can be provided as an MMS server **300** plus middleware software layers for all corresponding MMS client devices **314**, **316**, which can allow software developers to access the MMS functionality through an abstract hardware-independent software interface.

[0049] According to certain embodiments of the present invention, HipVoice emphasizes images, video, audio, scribbles, and text as its primary forms of media communication. HipVoice clients can connect and exchange text messages (which may be linked to email), images (as independent messages or attachments to other messages), video (as messages or attachments to messages), scribbles, and audio (as messages or attachments to messages). HipVoice can further be configured to provide functionality for full-duplex voice calls, or half-duplex or full-duplex push-to-talk capabilities, to any user with a unique IP address.

[0050] The MMS system can propagate communications using the Internet and several wireless WLAN providers, including T-Mobile, Sprint, Verizon and others. The MMS system can be integrated with cellular or landline phone networks to place outgoing calls to specific phone numbers. Accordingly, the MMS clients **314**, **316** can be configured to